Section	Indication of content
1 Title of the best practice	Biomass plant Beetsterzwaag
2 Precise theme of the practice	Renewable energy from windbreaks
3 Objectives of the best practice	• prunings of hedgerows and windbreaks use as biomass for renewable energy • encourage the production and use of renewable energy, the quality of rural areas and to employment. • provide heat to Rehabilitation Friesland and Lynden Steyn School.
4 Location	Beetsterzwaag, Friesland, The Netherlands.
5 Detailed description of the best practice	**Timescale**: In 2004 a feasibility study is done.
	Bodies Involved / Implementation: The exploitation of the biomass plant is in the hands of the agricultural association The Alde Delte from Opsterland. The agricultural association has developed a company incorporated under the name Delta T. Bio Energy BV. Also the foundation established the natural association BOOM which ensures a continuous supply of wood chips from the area around.
	Process and detailed content of the practice: Far transports lead to higher transportation costs and increasingly extra energy. In this case, the fuel comes from the vicinity of Beetsterzwaag and does not has to be transported over long distances. The total CO2 reduction compared to the use of natural gas is on an annual basis over 640 tons. In addition there is saved fossil energy per annum over 320,000 m3 natural gas. The rehabilitation center and school are located within the urban area of Beetsterzwaag and the installation is about 500 meters away built on a plot to Beetsterweg. To provide the rehabilitation center and the school to heat a heat pipe has been built. By an exchanger the energy is transferred to the existing heating systems. The existing boilers in the rehabilitation center and the school will stay intact as a back-up and will run during cold winter days to help out. The system basically works like a central heating. By the furnace, water in the heat exchanger is heated to 95 ° C and through a pipe system pomped over a distance of 500 meters to the heating of the rehabilitation center and the school. Then the water is cooled to 70 ° C and flows back through the return lines to the furnace. The plant is locally controlled by the computer and using modern communications technology from the central in Austria continuously monitored of interference. When these occur, immediately follows a warning by cell phone.
	Legal framework The Law on Spatial Planning obliges to hold hedgerows and windbreaks for conservation, but for this particular area grants are no longer available. To keep the maintenance of the landscape yet affordable there is searched for alternative income. With the installation of a plant for bio-energy are perspective for Beetsterzwaag is found. According to the Dutch Emission Guidelines, emissions of dust from the burning of clean wood is bounded. For a plant with a capacity of one megawatt, like here in Beetsterzwaag, is a requirement for emission of particulate matter of 50 mg/m3 flue gas.
	Financial Framework

	The total investment for the 1 megawatt wood-fired incinerator with heat pipe structure and the property is approximately 800,000 euros. Financing is beside the contribution of farmers, from grants from the Interreg IIIB North Sea Bio Energy project, the province of Friesland, the A7-Zone Landstad Friesland Fund, the municipality Opsterland and LTO-project fund. The funding is hosted by the Triodos Bank.
	Opportunities: • hedgerows and windbreaks in the area to maintain • The annual consumption of natural gas from the Rehabilitation Friesland School Lynden Steyn was about 400,000 m3. If the wood-burning incinerator best runs, it contains approximately 80% of the total energy demand Therefore more than 320,000 m3 of natural gas per year is saved.
	Threats: • Decreasing demand of heat in the future, caused by more energy efficient buildings; • Increased competition on bio fuels, ton results in rising prices " • Risk with possible Disruption to transport or fuel the plant.
	CO ² reduction (expected): CO2 saving approximately 640 tonnes / year
	Energy production: 1 MWth heat.
6 Evaluation	**Possible demonstrated results (eg through indicators)** • More than 320,000 m3 of natural gas per year is being saved. • CO2 savings are approximately 640 tonnes / year • Preservation of scenic landscape in the area (hedgerows and windbreaks) **Possible success factors:** • Communicating with policy makers and the public about the plant has been from the very beginning of the project an important focus for Beetsterzwaag. • prunings of hedgerows and windbreaks use as biomass to generate renewable energy.
7 Lessons learnt from the best practice	A small biomass plant can-be realized. The pilot of Beetsterzwaag gives an impulse to the production and use of renewable energy, the quality of rural areas and to employment.
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9 Other possible interesting information	Rural Service Area North region www.dienstlandelijkgebied.nl
10. Best practice transfered	